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Draft Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation FY04 Notification #04-10 IHSS Group 700-11 (Bowman's Pond and Steam Condensate Tanks)

June 2004

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Approval received from the Colorado Department of Public Health and Environment

( )

Approval letter contained in the Administrative Record

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ACRONYMS

AL	action level
AR	Administrative Record
BE	Biological Evaluation
BMP	best management practice
COC	contaminant of concern
CY	cubic yard
D&D	Decontamination and Decommissioning
DOE	U S Department of Energy
EDDIE	Environmental Data Dynamic Information Exchange
EPA	U S Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation
FY	Fiscal Year
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company, L L C
MDL	method detection limit
NFAA	No Further Accelerated Action
PAC	Potential Area of Concern
PCB	polychlorinated biphenyl
PCOC	potential contaminant of concern
PDF	Portable Document Format
POC	Point of Compliance
POE	Point of Evaluation
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS or Site	Rocky Flats Environmental Technology Site
RL	reporting limit
RSOP	RFCA Standard Operating Protocol
SAP	Sampling and Analysis Plan
SEP	Solar Evaporation Ponds
SSRS	Subsurface Soil Risk Screen
SVOC	semivolatile organic compound
UBC	Under Building Contamination
USACE	U S Army Corps of Engineers
VOC	volatile organic compound
WRW	wildlife refuge worker

1.0 INTRODUCTION

This Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2003a) Fiscal Year (FY) 04 Notification includes the notification to remediate Individual Hazardous Substance Sites (IHSSs) and Potential Areas of Concern (PACs) at the Rocky Flats Environmental Technology Site (RFETS or Site) Industrial Area (IA) during FY04 The purpose of this Notification is to invoke the ER RSOP for IHSS Group 700-11 Activities specified in the ER RSOP are not reiterated here, however, deviations from the ER RSOP are included where appropriate

Sediment and soil with contaminant concentrations greater than the RFCA wildlife refuge worker (WRW) action levels (ALs), or as indicated by the Subsurface Soil Risk Screen (SSRS), will be removed in accordance with RFCA (DOE et al 2003) and the ER RSOP (DOE 2003a) Remediation of IHSS Group 700-11 is being driven by historical WRW AL exceedances of polychlorinated biphenyls (PCBs) and semivolatile organic compounds (SVOCs)

The location of IHSS Group 700-11 is shown on Figure 1 The proposed remediation sites covered under ER RSOP Notification #04-10 are listed in Table 1

Table 1
Potential Remediation Areas for IHSS Group 700-11

IHSS Group	IHSS/PAC Site	PCOCs	Media	Estimated Remediation Volume
700-11	IHSS 139 1(N)(a) – Steam Condensate Holding Tanks	Metals PCBs Radionuclides VOCs	Soil and sediment	200 cy
	PAC 700-1108 – Bowman's Pond	Metals PCBs Radionuclides SVOCs VOCs		

CY – cubic yards
PCBs – polychlorinated biphenyls
SVOCs – semivolatile organic compounds
VOCs – volatile organic compounds

2.0 IHSS GROUP 700-11

Bowman's Pond (PAC 700-1108) and the Steam Condensate Tanks (IHSS 139 1[N][a]) comprise IHSS Group 700-11 Both areas are located north of Building 774 Bowman's Pond is a small, manmade depression that receives flow from foundation drains and storm drains from Buildings 771/774, resulting in a wetland IHSS 139 1(N)(a) consisted of two steel, aboveground storage tanks that received steam condensate from an evaporative waste concentration system formerly used in Building 774 When

operational, condensate was tested for the absence of radioactive contamination and released to either Bowman's Pond or directly to the drainage northeast of Bowman's Pond

2.1 PCOCs

Potential contaminants of concern (PCOCs) at IHSS Group 700-11 are listed in Table 1 Historical data from the Bowman's Pond area indicate that PCBs and SVOCs are present in sediments at concentrations above the WRW ALs None of the existing sediment samples from IHSS 139 1(N)(a) contained contaminants at levels above WRW ALs The PCOCs were determined based on process knowledge, historical knowledge, and data collected during previous studies (DOE 1991, 1992, 1999a, 1999b)

As described in IA Sampling and Analysis Plan (SAP)(IASAP) Addendum #IA-04-10 (DOE 2004), three biased and 12 statistical accelerated action sampling locations were selected to characterize IHSS Group 700-11 and will guide additional action if required Following removal of the concrete slab in IHSS 139 1(N)(a), confirmation samples will be collected from this area The potential remediation areas for IHSS Group 700-11 are shown on Figure 2

2.2 Project Conditions

IHSS Group 700-11 is located north of Building 774 Bowman's Pond consists of a small, manmade depression approximately 3 to 4 feet deep with an areal extent of approximately 28 by 33 feet Bowman's Pond was constructed to retain water discharged from building foundation drains and storm drains from the 700 Area, as shown on Figure 2 The pond discharges to the east, saturating an area approximately 200 by 40 feet resulting in a wetland environment IHSS 139 1(N)(a) formerly consisted of steam condensate tanks (T-107 and T-108) Although the tanks have been removed, the concrete slab that supported the former tanks remains in place Surface water drainage in the area generally flows from southwest to northeast

The U S Department of Energy (DOE) conducted a Biological Evaluation (BE) that describes impacts to wetlands in IHSS Group 700-11 Results of the BE indicate that in November 2001, Terry McKee of the U S Army Corps of Engineers (USACE) determined that both Bowman's Pond and the condensate wetland near Bowman's Pond were not jurisdictional wetlands (K-H 2001) The source of water for Bowman's Pond and the condensate wetland is from footer drains from the 700 Area buildings As the 700 Area buildings are torn down and remediated, water supplying these two small wetland areas will disappear As a result, both the 700 Area building removal and sediment and soil removal will destroy these small wetland areas Final contouring of the 700 Area may also bury this area under several feet of overburden Because these actions are required as part of the Site closure and cleanup under RFCA, these two small wetland areas will be eliminated The DOE is notifying the U S Environmental Protection Agency (EPA) of the results of the BE

2.3 RFCA SSRS Evaluation

An SSRS is performed when nonradionuclides and uranium are present in soil 6 inches from the ground surface, or when americium-241 and plutonium-239/240 are present below 3 feet from the ground surface Current site conditions were evaluated using available data to determine whether remediation is required by the SSRS An SSRS will be conducted again after the accelerated action and related confirmation sampling tasks are completed The accelerated actions taken, confirmation results, and a revised SSRS will be documented in the IHSS Group 700-11 Closeout Report

Screen 1 – Are contaminant of concern (COC) concentrations below RFCA Table 3 soil ALs for the WRW?

Existing soil data, presented in IASAP Addendum #IA-04-10 for IHSS Group 700-11 (DOE 2004), indicate that contaminant concentrations exceed RFCA WRW ALs for PCBs and SVOCs Additional characterization will be conducted during the implementation of IASAP Addendum #IA-04-10 (DOE 2004)

Screen 2 – Is there a potential for subsurface soil to become surface soil (landslide and erosion areas identified on Figure 1)?

IHSS Group 700-11 is located near an area subject to erosion or landslides in accordance with Figure 1 of the RFCA Modification (DOE et al 2003) Under the current site conditions, erosion from storm events or flooding is a possible mechanism where subsurface soil could become surface soil or impact surface water in Bowman's Pond

Screen 3 – Does subsurface soil contamination for radionuclides exceed criteria defined in Section 5.3 and Attachment 14?

Existing soil data, discussed in IASAP Addendum #IA-04-10 for IHSS Group 700-11 (DOE 2004), do not indicate that subsurface concentrations of radionuclides exceed RFCA WRW ALs (RFCA Section 5 3) (DOE et al 2003) However, further characterization will be performed in accordance with IASAP Addendum #IA-04-10 (DOE 2004), and results will be documented in the Closeout Report

Screen 4 – Is there an environmental pathway and sufficient quantity of COCs that would cause an exceedance of the surface water standards?

After Bowman's Pond accelerated action is complete (drained, excavated, and re-vegetated) the potential for exceedances of surface water standards via erosion should be low However, erosion of sediment and soil from a significant storm event or flooding in the future will continue to be a pathway for which contaminant migration may occur into and from IHSS Group 700-11

Runoff from IHSS Group 700-11 drains into an unnamed ditch that flows along the southern side of the perimeter road (north of the former Solar Evaporation Ponds [SEP]) through surface water Point of Evaluation (POE) SW120 Flow at SW120 is directed north into a culvert that empties into North Walnut Creek Flow downstream of this confluence is monitored by RFCA POE SW093 (DOE 2003b) This POE has had reported exceedances of water quality standards, however, SW093 receives water from a large part of the IA, and surface water quality at this location may not be attributable to any

single upgradient IHSS Group The potential for IHSS Group 700-11 to cause exceedances of surface water standards will be reevaluated based on the final characterization data

2.4 ER Remediation Plan

The RSOP Notification remediation plan for IHSS Group 700-11 includes the following objectives

- Remove sediment and soil with nonradionuclide or uranium contaminant concentrations greater than the RFCA WRW ALs to a depth of 6 inches If sediment and soil with contaminant concentrations greater than WRW ALs extends below 6 inches in depth, perform the SSRS to evaluate the need for further accelerated action
- Remove and recycle the concrete slab and retaining wall associated with the former steam condensate tanks in IHSS 139 1(N)(a) This concrete is expected to be recycled in accordance with the RSOP for Recycling Concrete (DOE 2003c) Disposal of this concrete is also permitted
- Following the removal of contaminated sediment and soil, collect confirmation soil samples in accordance with the IASAP (DOE 2001)

It is anticipated that after remediation there may be areas with concentrations of metals, radionuclides, and organics greater than the background means plus two standard deviations, or method detection limits (MDLs)/reporting limits (RLs), but below RFCA ALs

2.5 Stewardship Evaluation

Based on the PCOCs (Table 1) and the ER RSOP (DOE 2003a), it is anticipated that all contamination above RFCA ALs will be remediated Figure 2 shows the potential remediation areas

An additional stewardship evaluation will be conducted during remediation using the consultative process and documented in a Closeout Report for IHSS Group 700-11 A new map of residual contamination will be generated after remediation The following sections present the stewardship evaluation

2.5.1 Proximity to Other Contaminant Sources

IHSS Group 700-11 is in the RFETS IA and is located in close proximity to a potential contaminant source at IHSS Group 700-5 This IHSS Group consists of Under Building Contamination (UBC) 770 and is located west of IHSS Group 700-11 (Figure 2)

Two IHSS Groups located near IHSS Group 700-11 have been designated as No Further Accelerated Action (NFAA) sites These IHSS Groups include IHSS Groups 000-1 and 700-4 IHSS Group 000-1 includes the SEP and is located east of IHSS Group 700-11 IHSS Group 700-4 includes UBC 771 and UBC 774 and is located south of IHSS Group 700-11

2.5.2 Surface Water Protection

Surface water protection includes the following considerations

Is there a pathway to surface water from potential erosion to streams or drainages?

Contaminants in sediment and soil from IHSS Group 700-11 could be eroded causing impacts to surface water

Do characterization data indicate there are contaminants in surface soil?

Existing sediment data for IHSS Group 700-11 indicate there are concentrations of PCBs and SVOCs that exceed RFCA WRW ALs

Do monitoring results from POEs or Points of Compliance (POCs) indicate there are surface water impacts from the area under consideration?

The nearest surface water POE downstream of IHSS Group 700-11 is SW120 Flow at SW120 is directed north into a culvert that empties into North Walnut Creek Flow downstream of this confluence is monitored by RFCA POE SW093 (DOE 2003b) This POE has had reported exceedances of water quality standards, however, SW093 receives water from a large part of the IA, and surface water quality at this location may not be attributable to any single upgradient IHSS Group Final characterization data for IHSS Group 700-11 will be evaluated in the Closeout Report

Is the IHSS Group in an area with high erosion potential?

IHSS Group 700-11 is located near an area subject to erosion in accordance with Figure 1 of the RFCA Modification (DOE et al 2003) Flow from IHSS Group 700-11 is routed through approximately 700 feet of an unnamed ditch and storm drain, to its eventual confluence with North Walnut Creek

2.5.3 Monitoring

Monitoring includes the following considerations

Do monitoring results from POEs or POCs indicate there are groundwater impacts from the area under consideration?

The Site plume location map (DOE 2002) indicates that IHSS Group 700-11 is not located in an area of groundwater contamination There is volatile organic compound (VOC) groundwater contamination south (upgradient) of IHSS Group 700-11 and nitrate groundwater contamination east (cross-gradient) of IHSS Group 700-11 The groundwater plumes are attributable to multiple sources within the IA Impacted groundwater in this area is downgradient of a significant portion of the IA, and contaminant levels are attributable to many sources upgradient of IHSS Group 700-11 Further groundwater evaluation will be conducted as part of the groundwater plume remedial decision and future Sitewide evaluation

Can the impact be traced to a specific IHSS Group?

No

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Are additional monitoring stations needed?

Not applicable at this time The need for and placement of monitoring stations will be re-evaluated in the Long-Term Stewardship Plan

Can existing monitoring locations be deleted if additional remediation is conducted?

Not applicable at this time Existing wells monitor contamination from areas outside IHSS Group 700-11

2.5.4 Stewardship Actions and Recommendations

The current stewardship actions and recommendations for IHSS Group 700-11 are as follows

- Use best management practices (BMPs) to reduce erosion into surface water drainage
- Implement near-term institutional controls until final closure and stewardship decisions are implemented, including the following
  - Restrict access, and
  - Control soil excavations through the Site Soil Disturbance Permit process
- Implement long-term stewardship actions, including the following
  - Prohibitions on construction of buildings in the area, and
  - Restrictions on excavations or other soil disturbances

These recommendations may change based on in-process remediation activities and other future RFETS remediation decisions

2.6 Accelerated Action Remediation Goals

ER RSOP remedial action objectives (RAOs) include the following

- Provide a remedy consistent with the RFETS goal of protection of human health and the environment,
- Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls, and
- Minimize the spread of contaminants during implementation of accelerated actions

2.7 Treatment

Not applicable at this time

2.8 Project-Specific Monitoring

High-volume air samplers may be used at the remediation area consistent with work controls to determine airborne radioactivity concentrations The approximate location of an air sampler is shown on Figure 2

2.9 Resource Conservation and Recovery Act Units and Intended Waste Disposition

Not applicable

2.10 Administrative Record Documents

DOE, 1991, Assessment of Known, Suspect, and Potential Environmental Releases of Polychlorinated Biphenyls (PCBs), Preliminary Assessment/Site Description, Rocky Flats Plant, Golden, Colorado, October

DOE, 1992-2003, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado

DOE, 1999, Closeout Report for the Site Characterization of Bowmans Pond (PAC 700-1108) and Steam Condensate Holding Tanks (IHSS 139 1N), Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2002, Second Quarter RFCA Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Modification 1, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2003, Automated Surface-Water Monitoring Report, Water Year 2002, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Revision 1, Golden, Colorado, June

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U S Department of Energy, Colorado Department of Public Health and Environment, and U S Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June

2.11 Projected Schedule

Remediation of IHSS Group 700-11 is expected to begin in the fourth quarter of FY04

3.0 PUBLIC PARTICIPATION

ER RSOP Notification #04-10 activities will be discussed at the May 2004 ER/ Decontamination and Decommissioning (D&D) Status meeting A Portable Document Format (PDF) version of this Notification was provided to the local governments This Notification is available at the Rocky Flats Reading Rooms and on the Environmental Data Dynamic Information Exchange (EDDIE) Website at www rfets gov

4.0 REFERENCES

DOE, 1991, Assessment of Known, Suspect, and Potential Environmental Releases of Polychlorinated Biphenyls (PCBs), Preliminary Assessment/Site Description, Rocky Flats Plant, Golden, Colorado, October

DOE, 1992, Historical Release Report for the Rocky Flats Plant, Golden, Colorado, June

DOE, 1999a, Annual Historical Release Report for the Rocky Flats Plant, Golden, Colorado, September

DOE, 1999b, Closeout Report for the Site Characterization of Bowmans Pond (PAC 700-1108) and Steam Condensate Holding Tanks (IHSS 139 1N), Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June

DOE, 2002, Second Quarter RFCA Groundwater Monitoring Report, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Modification 1, Rocky Flats Environmental Technology Site, Golden, Colorado, September

DOE, 2003b, Automated Surface-Water Monitoring Report, Water Year 2002, Rocky Flats Environmental Technology Site, Golden, Colorado, November

DOE, 2003c, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Revision 1, Golden, Colorado, June

DOE, 2004, Industrial Area Sampling and Analysis Plan FY04 Addendum #IA-04-10, IHSS Group 700-11 (Bowman's Pond and Steam Condensate Tanks), Rocky Flats Environmental Technology Site, Golden, Colorado, March

DOE, CDPHE, and EPA, 2003, Modifications to the Rocky Flats Cleanup Agreement Attachment, U S Department of Energy, Colorado Department of Public Health and Environment, and U S Environmental Protection Agency, Rocky Flats Environmental Technology Site, Golden, Colorado, June

K-H, 2001, Trip Notes from COE Site Visit 11/20/01 (e-mail communication), November

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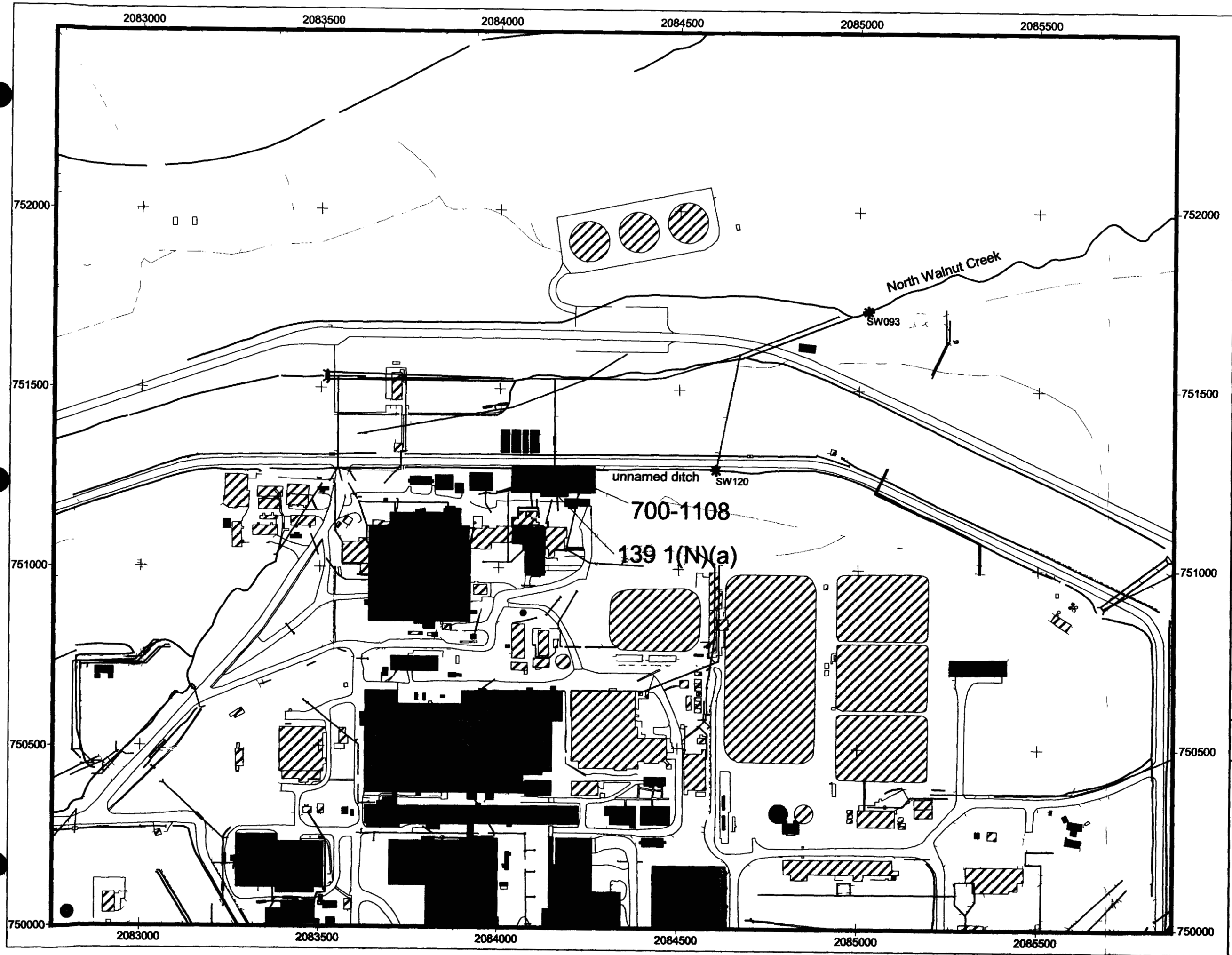
Figure 1

IHSS Group 700 11 (IHSS 139 1 [N][a] and PAC 700 1108) Location



KEY

- IHSS 139 1 (N)(a) (Hydroxide Tank KOH and NaOH condensate)
- PAC 700-1108 (Bowman s Pond)
- Demolished structure
- Structure
- Lakes and ponds
- Paved area
- Dirt road
- Stream ditch or other drainage
- Foundation drain
- Storm drain
- Surface water POE

N

90 0 90 180 Feet

Scale = 1 2 500

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

Prepared for:

KAISER•HILL COMPANY

700-11char_gpp_12_03 apr June 2004

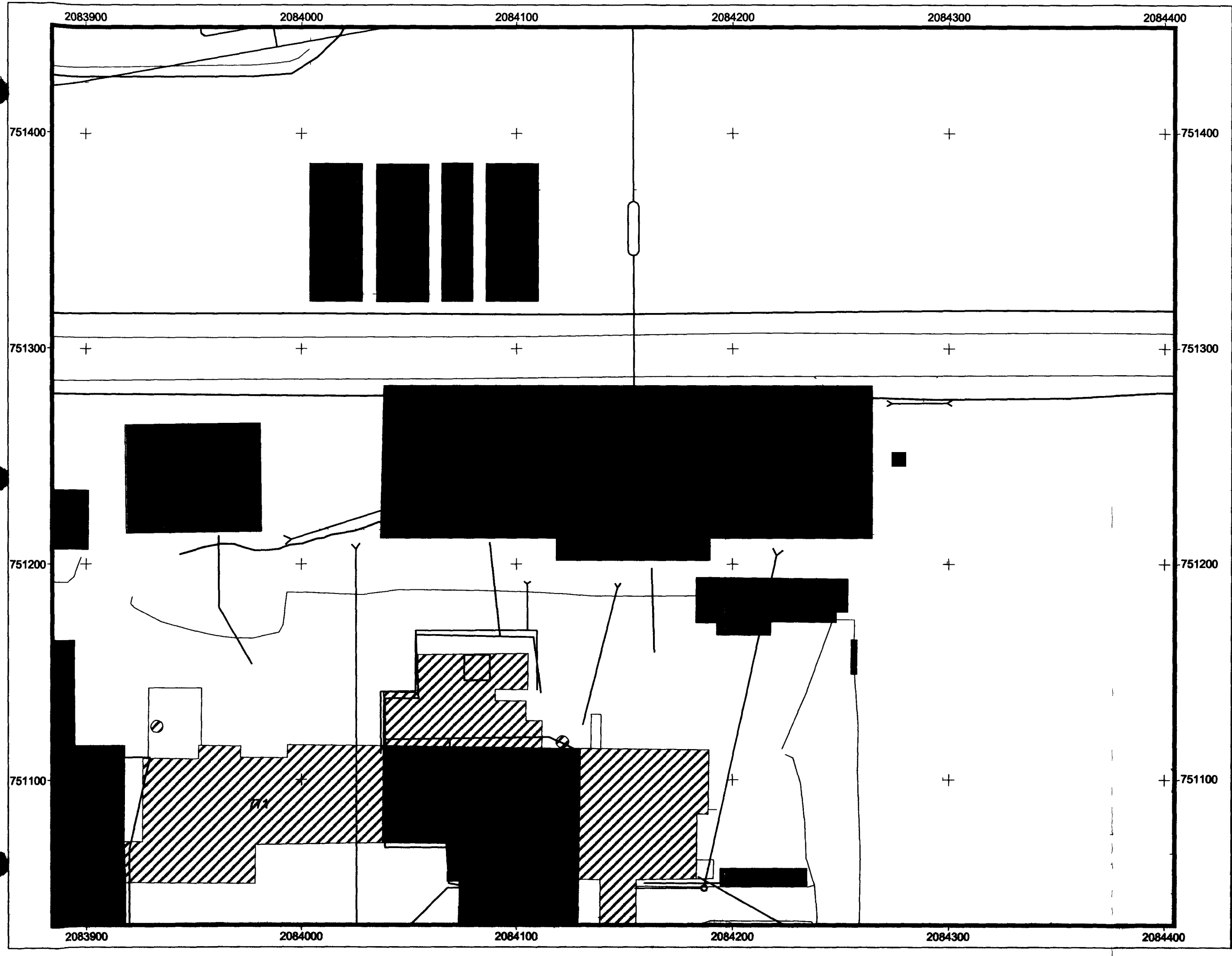


Figure 2

IHSS Group 700 11 (IHSS 139 1 [N][a] and PAC 700-1108) Potential Remediation Areas

KEY

- IHSS 139 1(N)(a) (Hydroxide Tank KOH and NaOH condensate)
- PAC 700-1108 (Bowman s Pond)
- IHSS
- UBC
- Demolished structure
- Structure
- Bowman s Pond
- Paved area
- Dirt road
- Stream ditch or other drainage
- Foundation drain
- Storm drain
- Approximate location of air sampler

N

90 0 90 180 Feet

Scale = 1 500

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD 27

U S Department of Energy
Rocky Flats Environmental Technology Site

Prepared by [redacted]

Prepared for

KAISER•HILL COMPANY

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